Jan. 27, 1970 J. H. COOPER 3,492,024

TRAILER HITCH FOR MOTORCYCLES

Filed Oct. 6, 1967

FIG. 1.

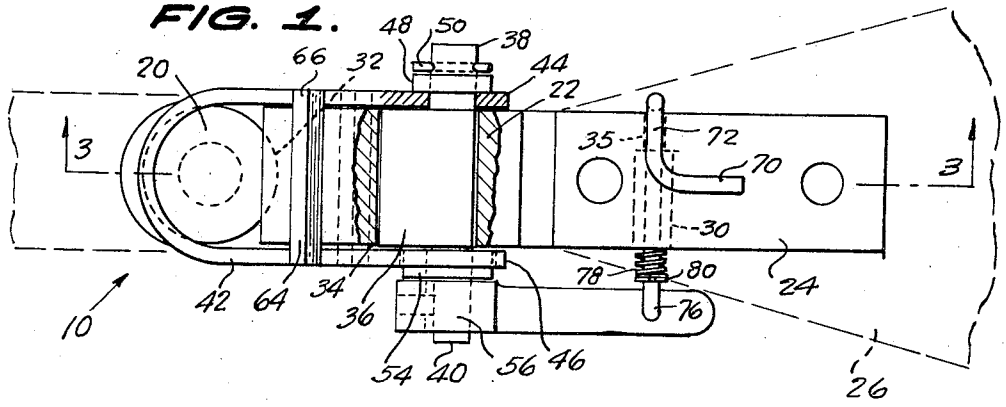


FIG. 2.

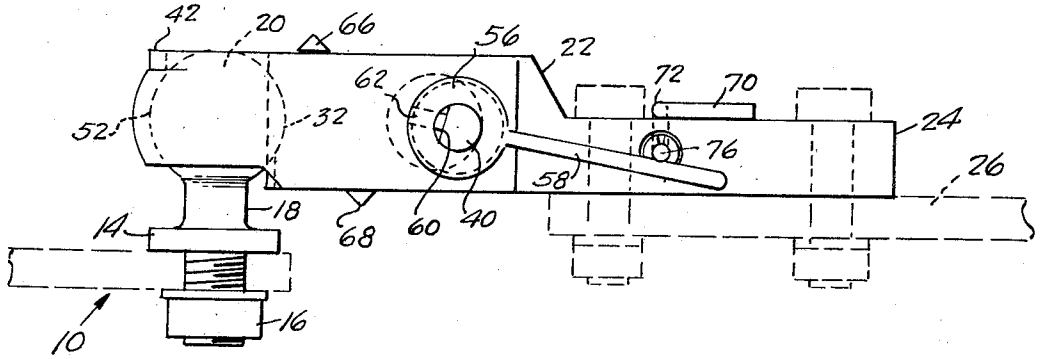


FIG. 3.

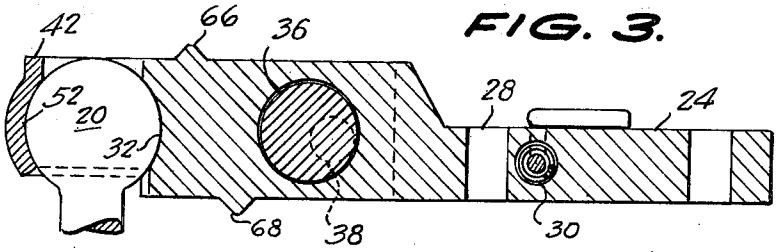
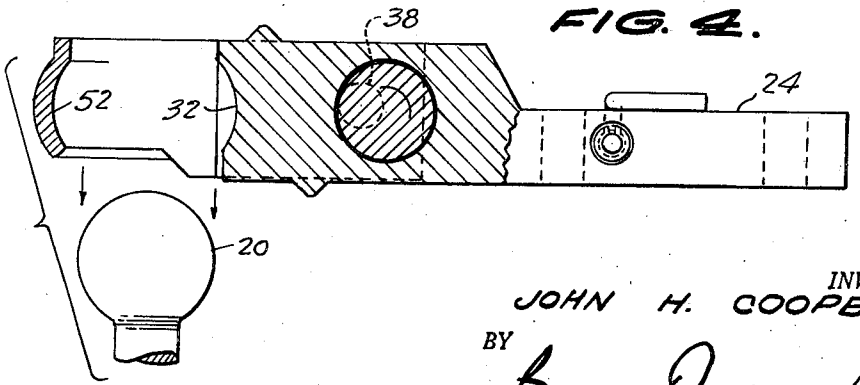


FIG. 4.



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TRAILER HITCH FOR MOTORCYCLES

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ABSTRACT OF THE DISCLOSURE

A device for hitching a trailer to the rear end of a motorcycle, said device comprising: a ball member to be secured to a motorcycle; a body member to be secured to a trailer; a cylinder mounted in the body member and having eccentric studs at each end; a fork having legs overlying said body member and engaging said studs and a handle for turning said cylinder.

It is an object of this invention to provide a hitch for connecting a trailer to the rear end of a motorcycle in such manner as to form a joint articulated in three dimensions.

It is a further object of this invention to provide a device as aforesaid in which the portion mounted on the motorcycle is of minimum size and weight.

It is a further object of this invention to provide a device as aforesaid in which the portion mounted on the trailer may be engaged with the portion on a motorcycle quickly and easily and retained as long as desired with no danger of separation.

It is a further object of this invention to provide a device as aforesaid which may quickly and easily be disengaged so as to separate the trailer from the motorcycle.

The above and other objects will be made clear from the following detailed description taken in connection with the annexed drawing, in which:

FIGURE 1 is a top plan view partially in section of the improved device;

FIGURE 2 is a side elevation of FIGURE 1;

FIGURE 3 is a central vertical cross-section through FIGURE 2, showing the parts in engaged position; and

FIGURE 4 is a view similar to FIGURE 3, showing the parts in open or released position.

Motorcycles like horses have a great deal more strength in pull than they have in "carry," that is, while a vertical load of a 1,000 pounds directly on the motorcycle probably would be disastrous to most motorcycles. A 1,000 pound load mounted on wheels easily can be pulled by most motorcycles. Popularity of the motorcycle as a means of transportation has increased very rapidly in the last few years but as a means of transportation, however, convenient and economical it may be so far as the human body is concerned, it is quite impossible with the conventional motorcycle to carry any appreciable amount of luggage when a trip of any length or duration is contemplated. Side cars are expensive and deprive the motorcycle of many of its advantages in compactness and the ability to thread through traffic. A trailer which can be used or disengaged at will is the ideal solution for the occasional luggage carrying need.

The present invention contemplates a device for hitching such a trailer to a motorcycle in which the attachment is quite convenient and positive and disengagement is equally quick, convenient and positive. In addition, this is accomplished with the permanent attachment to the motorcycle of an extremely minor part, adding virtually no perceptible weight to the vehicle and occupying no particularly otherwise useful space.

Referring now to FIGURE 1, a suitable portion of the rear end of the motorcycle is designated generally by the numeral **10**. A portion is drilled, as shown in FIGURE 2,

to receive the threaded shank **12** of a hitch member which engages the portion **10** and clamps it between a flange **14** and a nut **16**. A stem **18** rises from the flange **14** and is surmounted by a ball **20**. These are the only parts permanently attached to the motorcycle and even these may readily be detached during periods when there is no need for attachment of a trailer.

The hitch proper is made up of a body portion **22** which terminates rearwardly in a stem **24** for attachment to the trailer tongue **26**. The tongue **24** is drilled as at **28** for securement to the tongue **26** and also has a transverse bore **30** for a purpose to be presently described.

At its forward end the body portion **22** has formed a spherical pocket **32**, the radius to conform about the ball **20**. The body portion **22** with its pocket **32** constitutes a fixed jaw. The transverse bore **34** is formed in the body portion **22** and receives a cylinder **36** which has at each end aligned eccentrically placed studs **38** and **40**.

A U-shaped fork member **42** is sized to have one leg **44** overlie one side of the body portion **22**. This leg **44** is drilled to a diameter permitting a free running fit of the stud **38**. The other leg **46** overlies the opposite face of the body portion **22** and is drilled to pass the cylinder **36** so that the fork **42** is properly placed on the body portion **22**, a cylinder **36** and its associated studs may be passed through the leg **46** so that one stud **38** passes through the leg **44**. A washer **48** and cotter pin **50** serve to secure the members against disassembly.

In the curve of the U-shaped part of member **42** there is formed a spherical pocket **52** which is also of a radius to accommodate the ball **20**. A washer **54** is provided with a bore to fit the stud **40** of the cylinder **36** and overlying the washer **54** is the hub **56** of an operating handle **58**. The stud **40** has a flattened portion **60** which is engaged by a set screw **62** threaded into the hub **56** of the handle **58**. The U-shaped member **42** with its pocket **52**, when mounted in the manner just described, constitutes a second jaw pivotally mounted on the body portion **22**.

In FIGURES 1, 2 and 3, the parts are shown in engaged position, that is, the position they would occupy when the motorcycle is pulling the trailer. In FIGURE 4, the parts are shown in released condition, that is, the handle **58** has been turned from 90 to 180 degrees, thereby rotating the cylinder **36** within the body portion **22** and thereby moving the studs **38** and **40** forwardly toward the motorcycle to move the socket **52** away from the ball **20**, permitting withdrawal of the fork **42** and the body portion **22** away from the ball **20**. While in the engaged position, considerable three-dimensional freedom is provided as between the member **10** and the body portion **22** and, therefore, the trailer tongue **26**. In the horizontal plane, almost complete freedom is required in order to negotiate turns. In the vertical, however, there should be some limited movement and, accordingly, on the top side of the body member **22** there is formed a stop member **64** having an end **66** projecting outwardly over the leg **44** of the fork member **42**. On the underside of the body portion **22** a similar stop member **68** is provided which similarly overlaps and engages the leg **46**.

It will be noted that no matter whether the handle **58** be turned clockwise or counterclockwise from its position shown in FIGURES 1 and 2, release to the position of FIGURE 4 will occur. It is necessary, therefore, to provide some means to restain handle **58** in the closed or engaged position.

The above problem is solved through the use of the bore **30** previously noted as being formed in the stem **24** of the body portion **22**. A piece of rod stock is bent to form a handle portion **70**, a horizontal leg **72**, a vertically depending leg **74**, and a horizontal leg **76**. The bore **30** has a constricted portion **30'** which receives and guides the

part **76**. A spring **78** surrounds the portion **76** and extends into the bore **30** and bears against a split washer **80** which fits a groove in the member **76**. Accordingly, horizontal pressure on the handle portion **70** will withdraw the member **76** from the path of the handle **58**, permitting free movement of the handle either clockwise or counterclockwise for disengagement to the position of FIGURE 4. When the parts are reengaged the handle **58** is brought to overlie the portion **76** to prevent accidental dropping. The chance of the handle **58** of its own motion rising counterclockwise sufficiently to bring about disengagement is so remote as to be negligible.

While certain specific details have been disclosed herein, as an adjunct to describing the device, various details may be altered without departure from the basic concept of this invention. Accordingly, the invention is not to be limited to the precise details disclosed.

What is claimed is:

1. A hitch for securing a trailer to a motorcycle, said hitch comprising a ball member to be secured to a motorcycle; a body member to be secured to a trailer; a jaw formed in said body member; a second jaw pivotally connected to opposed, external sides of said body member and means in said pivotal connection for causing said pivoted jaw to recede from and move toward said first-named jaw for disengagement and engagement with said ball member.

2. A hitch as set forth in claim **1**, including retaining means for said jaw moving means.

3. A hitch as set forth in claim **1**, in which said pivotal connection comprises a cylinder rotatably mounted in said body portion, and eccentric studs at opposite ends of said cylinder, said second jaw pivotally receiving said studs and means for rotating said cylinder.

4. A hitch as set forth in claim **3**, including retaining means for said cylinder rotating means.

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U.S. Cl. X.R.

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